WHAT IS CLAIMED IS:

1. An apparatus for indicating enablement of transmit diversity of primary common control physical channel in a CDMA (Narrow Band Time Division Duplexing Code Division Multiple Access) mobile communication system, wherein a plurality of frames constituting a multiframe each include two subframes, each of said subframes including (i) a plurality of time slots each having data symbol fields scrambled with a given scrambling code and a midamble field indicating the given scrambling code, and (ii) a downlink pilot time slot having a synchronization code, intervening between first and second time slots of said plurality of time slots, wherein two adjacent frames make a frame pair, the apparatus indicating enablement of transmit diversity through at least two antennas by phase modulation of the synchronization codes in the downlink pilot time slots in each frame pair, the apparatus comprising:

a transmit diversity enable/disable controller for storing a plurality of patterns each comprised of a plurality of different phase modulation angles to indicate enablement of the transmit diversity, and sequentially outputting the phase modulation angles according to the usage of the transmit diversity in a unit of the patterns; and

a multiplier for phase modulating the synchronization codes sequentially received in a unit of a predetermined number of chips with the phase modulation angles output from the transmit diversity enable/disable controller on a one-to-one basis, and outputting the phase-modulated synchronization codes as the synchronization codes in the downlink pilot time slots in each frame pair.

2. The apparatus as claimed in claim 1, wherein the transmit diversity enable/disable controller stores a plurality of patterns each comprised of a plurality of different phase modulation angles to indicate nonenablement of the transmit diversity, said patterns being different from the patterns stored to indicate enablement of the transmit diversity, and sequentially outputs the phase modulation angles in the pattern unit based on the nonenablement of the transmit diversity.

3. The apparatus as claimed in claim 2, wherein the patterns include 8 different patterns each comprised of 4 phase modulation angles.

4. The apparatus as claimed in claim 2, wherein a first phase modulation angle of the phase modulation angles of the patterns is 45°.

5. The apparatus as claimed in claim 4, wherein the phase modulation angles other than the first phase modulation angle of each pattern are determined by a combination of 135°, 225° and 315°.

6. The apparatus as claimed in claim 1, wherein the predetermined number of chips is 64.

7. An apparatus for determining enablement/nonenablement of transmit diversity in CDMA mobile communication system, wherein a plurality of frames constituting a multiframe each include two subframes, each of said subframes including (i) a plurality of time slots each having data symbol fields scrambled with a given scrambling code and a midamble field indicating the given scrambling code, and (ii) a downlink pilot time slot having a synchronization code, intervening between first and second time slots of said plurality of time slots, wherein two adjacent frames make a frame pair, the apparatus determining enablement/nonenablement of transmit diversity depending on phase modulation angles of the synchronization codes in the downlink pilot time slots in each frame pair, the apparatus comprising:

a phase demodulator for searching for the phase modulation angles of the synchronization codes in the downlink pilot time slots in each frame pair; and

a transmit diversity detector for storing a plurality of first patterns each comprised of a plurality of different first phase modulation angles to indicate enablement of the transmit diversity, storing a plurality of second patterns each comprised of a plurality of different second phase modulation angles to indicate nonenablement of the diversity transmission, said second patterns being different from the first patterns, and determining use/nonuse of the transmit diversity by comparing the phase modulation angles searched by the phase demodulator with the first and second phase modulation angles of the first and second patterns.

8. The apparatus as claimed in claim 7, wherein the first and second patterns include 8 different patterns each comprised of 4 phase modulation angles.

9. The apparatus as claimed in claim 7, wherein a first phase modulation angle of the phase modulation angles of each pattern is 45°.

10. The apparatus as claimed in claim 9, wherein the phase modulation angles other than the first phase modulation angle of each pattern are determined by a combination of 135°, 225° and 315°.

11. A method for indicating enablement of transmit diversity CDMA mobile communication system, wherein a plurality of frames constituting a multiframe each include two subframes, each of said subframes including (i) a plurality of time slots each having data symbol fields scrambled with a given scrambling code and a midamble field indicating the given scrambling code, and (ii) a downlink pilot time slot having a synchronization code, intervening between first and second time slots of said plurality of time slots, wherein two adjacent frames make a frame pair, the method indicating enablement of transmit diversity through at least two antennas by phase modulation of the synchronization codes in the downlink pilot time slots in each frame pair, the method comprising the steps of:

storing a plurality of patterns each comprised of a plurality of different phase modulation angles to indicate enablement of the transmit diversity, and sequentially outputting the phase modulation angles by the diversity transmission in a unit of the patterns; and

phase modulating the synchronization codes sequentially received in a unit of a predetermined number of chips with the phase modulation angles sequentially output in the pattern unit on a one-to-one basis, and outputting the phase-modulated synchronization codes as the synchronization codes in the downlink pilot time slots in each frame pair.

12. The method as claimed in claim 11, further comprising the step of storing a plurality of patterns each comprised of a plurality of different phase

modulation angles to indicate nonenablement of the diversity transmission, said patterns being different from the patterns stored to indicate enablement of the transmit diversity, and sequentially outputting the phase modulation angles in the pattern unit based on the nonenablement of the transmit diversity.

13. The method as claimed in claim 12, wherein the patterns include 8 different patterns each comprised of 4 phase modulation angles.

14. The method as claimed in claim 12, wherein a first phase modulation angle out of the phase modulation angles of the patterns is 45°.

15. The method as claimed in claim 14, wherein the phase modulation angles other than the first phase modulation angle of each pattern are determined by a combination of 135°, 225° and 315°.

16. The method as claimed in claim 11, wherein the predetermined number of chips is 64.

17. A method for determining enablement/nonenablement of transmit diversity in a CDMA mobile communication system, wherein a plurality of frames constituting a multiframe each include two subframes, each of said subframes including (i) a plurality of time slots each having data symbol fields scrambled with a given scrambling code and a midamble field indicating the given scrambling code, and (ii) a downlink pilot time slot having a synchronization code, intervening between first and second time slots of said plurality of time slots, wherein two adjacent frames make a frame pair, the method determining enablement/nonenablement of diversity transmission depending on phase modulation angles of the synchronization codes in the downlink pilot time slots in each frame pair, the method comprising the steps of:

searching for the phase modulation angles of the synchronization codes in the downlink pilot time slots in each frame pair; and

storing a plurality of first patterns each comprised of a plurality of different first phase modulation angles to indicate enablement of the transmit diversity, storing a

plurality of second patterns each comprised of a plurality of different second phase modulation angles to indicate nonenablement of the transmit diversity, said second patterns being different from the first patterns, and determining use/nonuse of the transmit diversity by comparing the phase modulation angles searched by phase demodulation with the first and second phase modulation angles of the first and second patterns.

18. The method as claimed in claim 17, wherein the first and second patterns include 8 different patterns each comprised of 4 phase modulation angles.

19. The method as claimed in claim 17, wherein a first phase modulation angle of the phase modulation angles of each pattern is 45°.

20. The method as claimed in claim 19, wherein the phase modulation angles other than the first phase modulation angle of each pattern are determined by a combination of 135°, 225° and 315°.

21. An apparatus for transmitting a primary common control physical channel (P-CCPCH) signal using transmit diversity in a UTRAN for a CDMA mobile communication system, comprising:

a block space-time transmit diversity (STTD) encoder for outputting first and second signals being orthogonal with each other by performing STTD encoding on a received P-CCPCH signal;

a first multiplier for spreading the first signal with a given orthogonal code;

a second multiplier for spreading an output of the first multiplier with a given scrambling code;

a first multiplexer for multiplexing an output of the second multiplier and a first midamble indicating the given scrambling code;

a downlink pilot time slot generator for outputting a downlink pilot time slot by phase modulating synchronization codes received in a unit of a predetermined number of chips with a plurality of different phase modulation angles for indicating enablement of the diversity transmission;

a second multiplexer for multiplexing an output of the first multiplexer and the downlink pilot time slot, and outputting the multiplexed results through one of two antennas used for the transmit diversity;

a third multiplier for spreading the second signal with the given orthogonal code;

a fourth multiplier for spreading an output of the third multiplier with the given scrambling code; and

a third multiplexer for multiplexing an output of the fourth multiplier and a second midamble being different from the first midamble indicating the given scrambling code, and outputting the multiplexed results through another one of the two antennas.

22. The apparatus as claimed in claim 23, wherein the downlink pilot time slot generator comprises:

a transmit diversity enable/disable controller for storing a plurality of patterns each comprised of a plurality of different phase modulation angles to indicate enablement of the diversity transmission, and sequentially outputting the phase modulation angles in a unit of the patterns by the transmit diversity; and

a multiplier for phase modulating the synchronization codes sequentially received in a unit of a predetermined number of chips with the phase modulation angles output from the transmit diversity enable/disable controller on a one-to-one basis, and outputting the phase-modulated results as the synchronization codes in the downlink pilot time slots in each frame pair.

23. The apparatus as claimed in claim 22, wherein the transmit diversity enable/disable controller stores a plurality of patterns each comprised of a plurality of different phase modulation angles to indicate nonenablement of the transmit diversity, said patterns being different from the patterns stored to indicate enablement of the transmit diversity, and sequentially outputs the phase modulation angles in the pattern unit based on the disablement of the transmit diversity.

24. A method for transmitting a primary common control physical

channel (P-CCPCH) signal using transmit diversity from a UTRAN to a UE in a CDMA mobile communication system, comprising the steps of:

outputting first and second signals being orthogonal with each other by performing STTD encoding on a received P-CCPCH signal;

spreading the first signal with a given orthogonal code, and spreading the spread first signal with a given scrambling code;

multiplexing the spread first signal and a first midamble indicating the given scrambling code;

generating a downlink pilot time slot by phase modulating synchronization codes received in a unit of a predetermined number of chips with a plurality of different phase modulation angles for indicating enablement of the diversity transmission;

multiplexing the multiplexed first midamble and the downlink pilot time slot, and outputting the multiplexed results through one of two antennas used for the transmit diversity;

spreading the second signal with the given orthogonal code, and spreading the spread second signal with the given scrambling code; and

multiplexing the spread second signal and a second midamble being different from the first midamble indicating the given scrambling code, and outputting the multiplexed results through another one of the two antennas.

25. The method as claimed in claim 24, wherein the downlink pilot time slot generation step comprises the steps of:

storing a plurality of patterns each comprised of a plurality of different phase modulation angles to indicate enablement of the transmit diversity, and sequentially outputting the phase modulation angles in a unit of the patterns according to the use of transmit diversity; and

phase modulating the synchronization codes sequentially received in a unit of a predetermined number of chips with the phase modulation angles output from a transmit diversity enable/disable controller on a one-to-one basis, and outputting the phase-modulated results as the synchronization codes in the downlink pilot time slots.

26. The method as claimed in claim 25, further comprising the step of

storing a plurality of patterns each comprised of a plurality of different phase modulation angles to indicate nonenablement of the transmit diversity, said patterns being different from the patterns stored to indicate enablement of the transmit diversity, and sequentially outputting the phase modulation angles in the pattern unit based on the disablement of the transmit diversity.

27. An apparatus for determining enablement/nonenablement of transmit diversity in a CDMA mobile communication system, wherein a plurality of frames constituting a multiframe each include two subframes, each of said subframes including (i) a plurality of time slots each having data symbol fields scrambled with a given scrambling code and a midamble field indicating the given scrambling code, and (ii) a downlink pilot time slot having a synchronization code, intervening between first and second time slots of said plurality of time slots, wherein two adjacent frames make a frame pair, the apparatus determining enablement/nonenablement of transmit diversity depending on phase modulation angles of the synchronization codes in the downlink pilot time slots in each frame pair, the apparatus comprising:

a first demultiplexer for receiving a plurality of frames, and demultiplexing the received frames into the scrambled data symbols and the downlink pilot time slots;

a second demultiplexer for receiving the downlink pilot time slots from the first demultiplexer and demultiplexing each of the received downlink pilot time slots into a guard period and the synchronization code;

a phase demodulator for receiving the synchronization codes from the second demultiplexer and searching for phase modulation angles used for phase modulation of the synchronization codes;

a transmit diversity detector for storing a plurality of first patterns each comprised of a plurality of different first phase modulation angles to indicate enablement of the transmit diversity, storing a plurality of second patterns each comprised of a plurality of different second phase modulation angles to indicate nonenablement of the transmit diversity, said second patterns being different from first patterns, and determining use/nonuse of the transmit diversity by comparing the phase modulation angles searched by the phase demodulator with the first and second phase modulation angles of the first and second patterns;

a first multiplier for multiplying the scrambled data symbols received from the first demultiplexer with the scrambling code determined by the midamble to descramble the data symbols;

a second multiplier for multiplying the descrambled data symbols from the first multiplier with a given orthogonal code to despread the data symbols;

a third demultiplexer for demultiplexing the data symbols despread by the second multiplier according to a signal output from the transmit diversity detector;

a channel estimator for generating a channel estimation signal for the frames; and

an STTD decoder for receiving data symbols from the third demultiplexer due to use of the transmit diversity, and STTD decoding the received data symbols with the channel estimation signal provided from the channel estimator.

28. A method for determining enablement/nonenablement of transmit diversity in a CDMA mobile communication system, wherein a plurality of frames constituting a multiframe each include two subframes, each of said subframes including (i) a plurality of time slots each having data symbol fields scrambled with a given scrambling code and a midamble field indicating the given scrambling code, and (ii) a downlink pilot time slot having a synchronization code, intervening between first and second time slots of said plurality of time slots, wherein two adjacent frames make a frame pair, the method determining enablement/nonenablement of transmit diversity depending on phase modulation angles of the synchronization codes in the downlink pilot time slots in each frame pair, the method comprising the steps of:

receiving a plurality of frames, and demultiplexing the received frames into the scrambled data symbols and the downlink pilot time slots;

receiving the downlink pilot time slots and demultiplexing each of the received downlink pilot time slots into a guard period and the synchronization code;

receiving the demultiplexed synchronization codes and searching for phase modulation angles used for phase modulation of the synchronization codes;

storing a plurality of first patterns each comprised of a plurality of different first phase modulation angles to indicate enablement of the transmit diversity, storing a plurality of second patterns each comprised of a plurality of different second phase

modulation angles to indicate nonenablement of the transmit diversity, said second patterns being different from first patterns, and determining use/nonuse of the transmit diversity by comparing the searched phase modulation angles with the first and second phase modulation angles of the first and second patterns;

receiving the scrambled data symbols and descrambling the received scrambled data symbols with the scrambling code determined by the midamble;

despreading the descrambled data symbols with a given orthogonal code;

demultiplexing the despread data symbols according to whether the diversity transmission is used or not; and

STTD decoding, if the transmit diversity is used, the data symbols with a channel estimation signal for the frames.